

# FSA2001

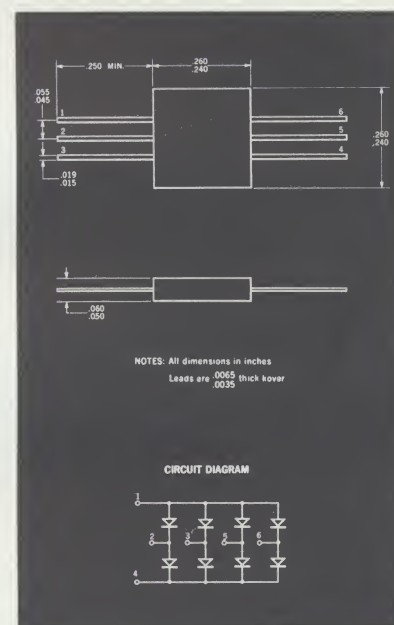
## ULTRA FAST, EIGHT DIODE, CORE DRIVER ARRAY

### SILICON PLANAR EPITAXIAL CONSTRUCTION

**GENERAL DESCRIPTION** — These Silicon Planar Epitaxial Diode Arrays were designed especially for high-speed core driver applications. They are hermetically sealed in a ceramic package. The excellent thermal conductivity of the ceramic permits operation to 400 mW.

#### MAXIMUM RATINGS (25°C) (Note 1)

$V_{IV}$	Working Inverse Voltage	40 V
$I_O$	Average Rectified Current	250 mA
$I_F$	Forward Current Steady State DC	330 mA
$i_f$	Recurrent Peak Forward Current	800 mA
$i_f(\text{surge})$	Peak Forward Surge Current Pulse Width of 1.0 sec	500 mA
$i_f(\text{surge})$	Peak Forward Surge Current Pulse Width of 1.0 $\mu\text{sec}$	2000 mA
$P$	Power Dissipation	400 mW
$P$	Power Dissipation at 125°C	120 mW
$T_A$	Operating Temperature	-65°C to +175°C
$T_{stg}$	Storage Temperature, Ambient	-65°C to +200°C



#### ELECTRICAL CHARACTERISTICS (25°C Free Air Temperature unless otherwise noted)

Symbol	Characteristic	Min.	Max.	Units	Test Conditions
$V_{F1}$	Forward Voltage		1.50	V	$I_F = 500 \text{ mA}$ (Note 2)
$V_{F2}$	Forward Voltage		1.20	V	$I_F = 300 \text{ mA}$ (Note 2)
$V_{F3}$	Forward Voltage		1.10	V	$I_F = 200 \text{ mA}$ (Note 2)
$BV$	Breakdown Voltage	60		V	$I_R = 100 \mu\text{A}$
$I_{R1}$	Reverse Current		100	nA	$V_R = -40 \text{ V}$ (Note 3)
$I_{R2}$	Reverse Current		100	$\mu\text{A}$	$V_R = -40 \text{ V}$ (Note 3)
$C$	Capacitance		8.0	pf	$V_R = 0, f = 1 \text{ Mc}$ (Note 4)
$t_{rr1}$	Reverse Recovery Time		25	nsec	$I_F = I_R = 10 \text{ mA to } 200 \text{ mA},$ $R_L = 100 \Omega, \text{ Rec. to } 0.1 I_F$
$t_{rr2}$	Reverse Recovery Time		90	nsec	$I_F = 300 \text{ mA}, I_R = 60 \text{ mA},$ $R_L = 100 \Omega, \text{ Rec. to } 20 \text{ mA}$
$V_{FM}$	Peak Forward Voltage		5.0	V	$I_F = 500 \text{ mA}, t_r \leq 10 \text{ nsec}$ (Note 5)
$t_{fr}$	Forward Recovery Time		40	nsec	$I_F = 500 \text{ mA}, t_r \leq 10 \text{ nsec},$ (Note 5) Rec. to 1.6 V

(See notes on back page)

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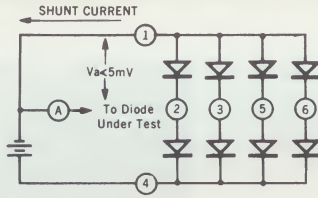
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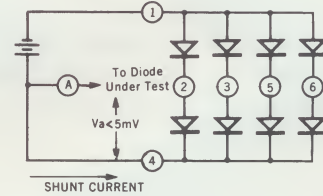
# ULTRA FAST, EIGHT DIODE, CORE DRIVER ARRAY FSA2001

## NOTES:

- (1) Ratings apply to individual diodes. For multiple diode operation, total power must not exceed power dissipation rating listed.
- (2) Pulse Input Current - Duty cycle less than 1.0%.
- (3) Reverse current measurements between terminals result in substantial leakage contributions from other diodes in the array. To measure diodes individually (specification limit is for individual diodes), current may be shunted by employing following test configuration.

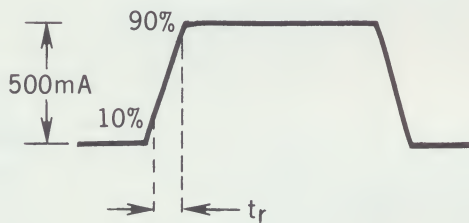


TEST CONNECTIONS FOR  
COMMON-CATHODE DIODES

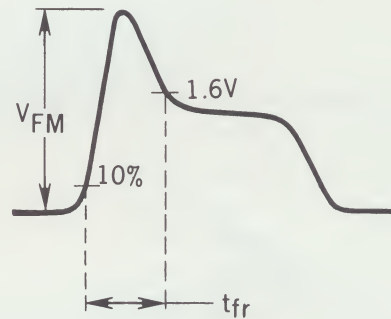
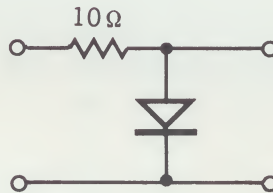


TEST CONNECTIONS FOR  
COMMON-ANODE DIODES

- (4) Capacitance cannot conveniently be measured on individual diodes due to contributions of other diodes in the array. Limit listed is for pin-to-pin capacitance across any one of the diodes (i.e., 1 to 2, 1 to 3, etc. or 4 to 2, 4 to 3, etc.)
- (5) Test Circuit for  $V_{FM}$  and  $t_{fr}$  is as shown below:



INPUT CURRENT PULSE



OUTPUT VOLTAGE PULSE



# FSA1413

## ULTRA FAST, EIGHT DIODE, CORE DRIVER ARRAY

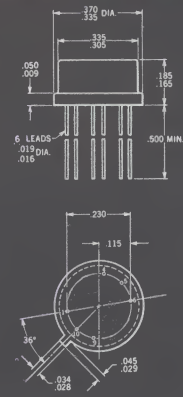
### SILICON PLANAR EPITAXIAL CONSTRUCTION

**GENERAL DESCRIPTION** - These Silicon Planar Epitaxial Diode Arrays were designed especially for high-speed core driver applications. They are hermetically sealed in the basic 10 lead TO-5 package. The excellent thermal conductivity of the package permits operation to 400 mW.

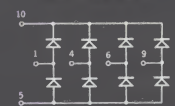
#### MAXIMUM RATINGS (25°C) (Note 1)

WIV	Working Inverse Voltage	40 V
$I_O$	Average Rectified Current	250 mA
$I_F$	Forward Current Steady State DC	330 mA
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$i_f(\text{surge})$	Peak Forward Surge Current Pulse Width of 1.0 sec	500 mA
$i_f(\text{surge})$	Peak Forward Surge Current Pulse Width of 1.0 $\mu\text{sec}$	2000 mA
P	Power Dissipation	400 mW
P	Power Dissipation at 125°C	120 mW
$T_A$	Operating Temperature	-65°C to +175°C
$T_{\text{stg}}$	Storage Temperature, Ambient	-65°C to +200°C

#### PHYSICAL DIMENSIONS



#### CIRCUIT DIAGRAM



#### ELECTRICAL CHARACTERISTICS (25°C Free Air Temperature unless otherwise noted)

Symbol	Characteristic	Min.	Max.	Units	Test Conditions
$V_{F1}$	Forward Voltage		1.50	V	$I_F = 500 \text{ mA}$ (Note 2)
$V_{F2}$	Forward Voltage		1.20	V	$I_F = 300 \text{ mA}$ (Note 2)
$V_{F3}$	Forward Voltage		1.10	V	$I_F = 200 \text{ mA}$ (Note 2)
BV	Breakdown Voltage	60		V	$I_R = 100 \mu\text{A}$
$I_{R1}$	Reverse Current		100	nA	$V_R = -40 \text{ V}$ (Note 3)
$I_{R2}$	Reverse Current		100	$\mu\text{A}$	$V_R = -40 \text{ V}$ (Note 3)
C	Capacitance		8.0	pf	$V_R = 0, f = 1 \text{ Mc}$ (Note 4)
$t_{rr1}$	Reverse Recovery Time		25	nsec	$I_F = I_R = 10 \text{ mA to } 200 \text{ mA}, R_L = 100 \Omega, \text{ Rec. to } 0.1 I_F$
$t_{rr2}$	Reverse Recovery Time		90	nsec	$I_F = 300 \text{ mA}, I_R = 60 \text{ mA}, R_L = 100 \Omega, \text{ Rec. to } 20 \text{ mA}$
$V_{FM}$	Peak Forward Voltage		5.0	V	$I_F = 500 \text{ mA}, t_r \leq 10 \text{ nsec}$ (Note 5)
$t_{fr}$	Forward Recovery Time		40	nsec	$I_F = 500 \text{ mA}, t_r \leq 10 \text{ nsec}, \text{ Rec. to } 1.6 \text{ V}$ (Note 5)

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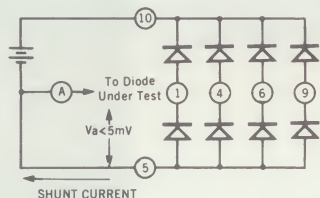
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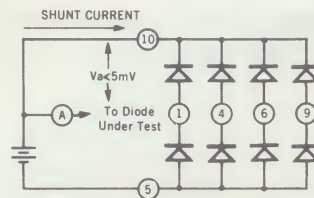
# ULTRA FAST, EIGHT DIODE, CORE DRIVER ARRAY FSA1413

## NOTES:

- (1) Ratings apply to individual diodes. For multiple diode operation, total power must not exceed power dissipation rating listed.
- (2) Pulse Input Current - Duty cycle less than 1.0%.
- (3) Reverse current measurements between terminals result in substantial leakage contributions from other diodes in the array. To measure diodes individually (specification limit is for individual diodes), current may be shunted by employing following test configuration.

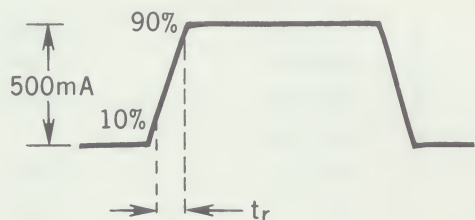


**TEST CONNECTIONS FOR  
COMMON-CATHODE DIODES**

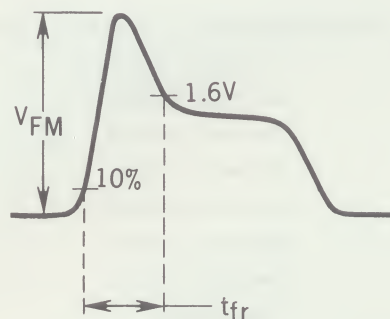
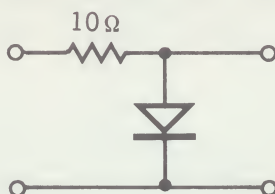


**TEST CONNECTIONS FOR  
COMMON-ANODE DIODES**

- (4) Capacitance cannot conveniently be measured on individual diodes due to contributions of other diodes in the array. Limit listed is for pin-to-pin capacitance across any one of the diodes (i.e., 5 to 1, 10 to 6, etc.)
- (5) Test Circuit for  $V_{FM}$  and  $t_{fr}$  is as shown below:



**INPUT CURRENT PULSE**



**OUTPUT VOLTAGE PULSE**



# FSA2000

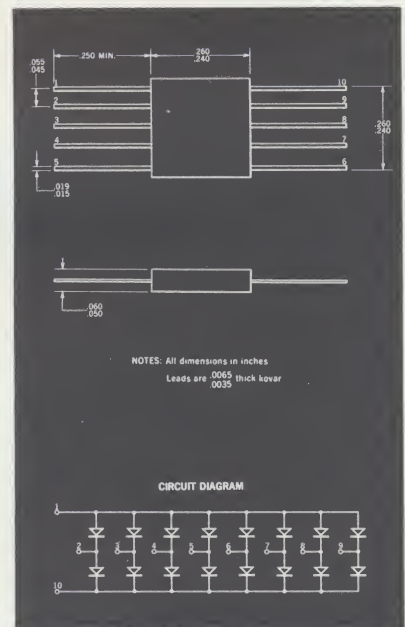
## ULTRA FAST, SIXTEEN DIODE, CORE DRIVER ARRAY

### SILICON PLANAR EPITAXIAL CONSTRUCTION

**GENERAL DESCRIPTION** - These Silicon Planar Epitaxial Diode Arrays were designed especially for high-speed core driver applications. They are hermetically sealed in a ceramic package. The excellent thermal conductivity of the ceramic permits operation to 400 mW.

#### MAXIMUM RATINGS (25°C) (Note 1)

WIV	Working Inverse Voltage	40 V
$I_O$	Average Rectified Current	250 mA
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$i_f(\text{surge})$	Peak Forward Surge Current Pulse Width of 1.0 sec	500 mA
$i_f(\text{surge})$	Peak Forward Surge Current Pulse Width of 1.0 $\mu\text{sec}$	2000 mA
P	Power Dissipation	400 mW
P	Power Dissipation at 125°C	120 mW
$T_A$	Operating Temperature	-65°C to +175°C
$T_{\text{stg}}$	Storage Temperature, Ambient	-65°C to +200°C



#### ELECTRICAL CHARACTERISTICS (25°C Free Air Temperature unless otherwise noted)

Symbol	Characteristic	Min.	Max.	Units	Test Conditions
$V_{F1}$	Forward Voltage		1.50	V	$I_F = 500 \text{ mA}$ (Note 2)
$V_{F2}$	Forward Voltage		1.20	V	$I_F = 300 \text{ mA}$ (Note 2)
$V_{F3}$	Forward Voltage		1.10	V	$I_F = 200 \text{ mA}$ (Note 2)
BV	Breakdown Voltage	60		V	$I_R = 100 \mu\text{A}$
$I_{R1}$	Reverse Current		100	nA	$V_R = -40 \text{ V}$ (Note 3)
$I_{R2}$	Reverse Current ( $T_A = 150^\circ\text{C}$ )		100	$\mu\text{A}$	$V_R = -40 \text{ V}$ (Note 3)
C	Capacitance		8.0	pf	$V_R = 0, f = 1 \text{ Mc}$ (Note 4)
$t_{rr1}$	Reverse Recovery Time		25	nsec	$I_F = I_R = 10 \text{ mA to } 200 \text{ mA},$ $R_L = 100 \Omega, \text{ Rec. to } 0.1 I_F$
$t_{rr2}$	Reverse Recovery Time		90	nsec	$I_F = 300 \text{ mA}, I_R = 60 \text{ mA},$ $R_L = 100 \Omega, \text{ Rec. to } 20 \text{ mA}$
$V_{FM}$	Peak Forward Voltage		5.0	V	$I_F = 500 \text{ mA}, t_r \leq 10 \text{ nsec}$ (Note 5)
$t_{fr}$	Forward Recovery Time		40	nsec	$I_F = 500 \text{ mA}, t_r \leq 10 \text{ nsec},$ (Note 5) Rec. to 1.6 V

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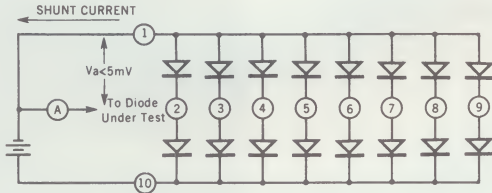
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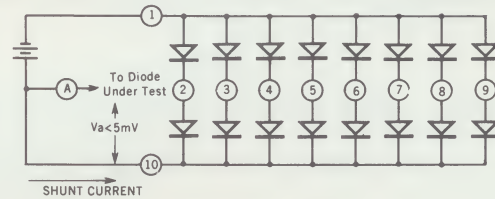
# ULTRA FAST, SIXTEEN DIODE, CORE DRIVER ARRAY FSA2000

## NOTES:

- (1) Ratings apply to individual diodes. For multiple diode operation, total power must not exceed power dissipation rating listed.
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- (3) Reverse current measurements between terminals result in substantial leakage contributions from other diodes in the array. To measure diodes individually (specification limit is for individual diodes), current may be shunted by employing following test configuration.

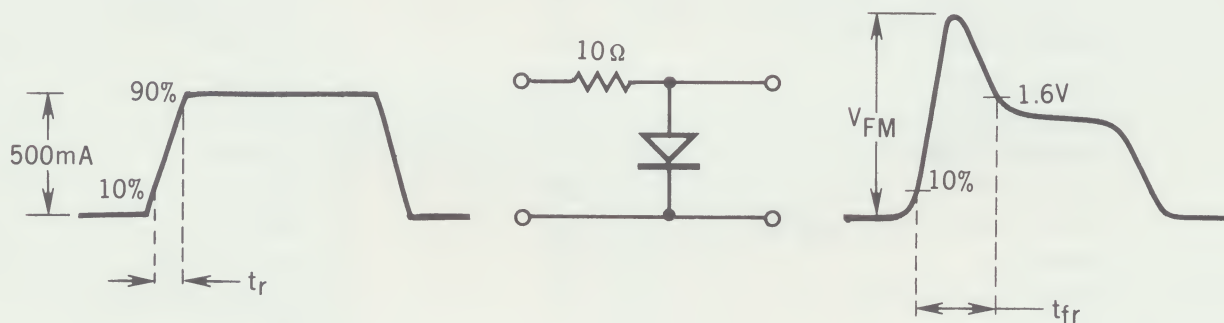


**TEST CONNECTIONS FOR  
COMMON-CATHODE DIODES**



**TEST CONNECTIONS FOR  
COMMON-ANODE DIODES**

- (4) Capacitance cannot conveniently be measured on individual diodes due to contributions of other diodes in the array. Limit listed is for pin-to-pin capacitance across any one of the diodes (i.e., 1 to 2, 1 to 3, etc. or 10 to 2, 10 to 3, etc.)
- (5) Test Circuit for  $V_{FM}$  and  $t_{fr}$  is as shown below:



**INPUT CURRENT PULSE**

**OUTPUT VOLTAGE PULSE**



# FSA2003

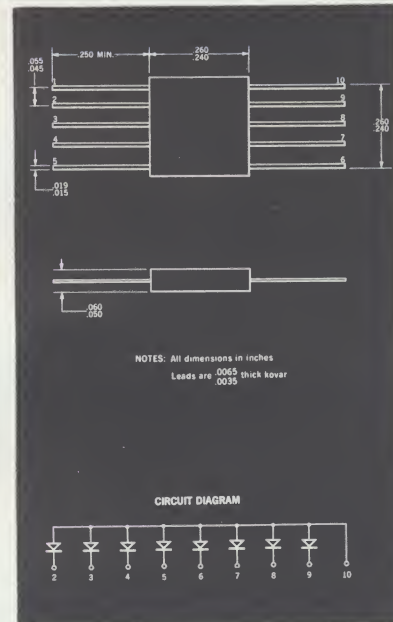
## ULTRA FAST, EIGHT DIODE, COMMON-ANODE ARRAY

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P	Power Dissipation	400 mW
P	Power Dissipation at 125°C	120 mW
$T_A$	Operating Temperature	-65°C to +175°C
$T_{\text{stg}}$	Storage Temperature, Ambient	-65°C to +200°C



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$I_{R2}$	Reverse Current ( $T_A = 150^\circ\text{C}$ )		100	$\mu\text{A}$	$V_R = -40 \text{ V}$
C	Capacitance		7.0	pf	$V_R = 0, f = 1 \text{ Mc}$
$t_{rr1}$	Reverse Recovery Time		25	nsec	$I_F = I_R = 10 \text{ mA to } 200 \text{ mA},$ $R_L = 100 \Omega, \text{ Rec. to } 0.1 I_F$
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$V_{FM}$	Peak Forward Voltage		5.0	V	$I_F = 500 \text{ mA}, t_r \leq 10 \text{ nsec}$ (Note 3)
$t_{fr}$	Forward Recovery Time		40	nsec	$I_F = 500 \text{ mA}, t_r \leq 10 \text{ nsec},$ (Note 3) Rec. to 1.6 V

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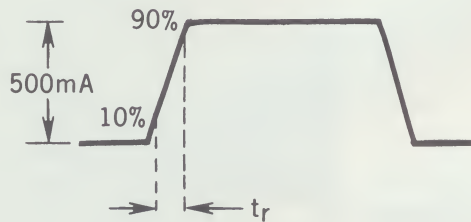
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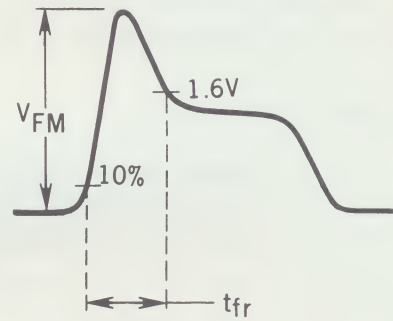
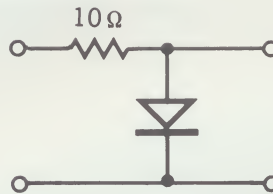
## ULTRA FAST, EIGHT DIODE, COMMON-ANODE ARRAY FSA2003

### NOTES:

- (1) Ratings apply to individual diodes. For multiple diode operation, total power must not exceed power dissipation rating listed.
- (2) Pulse Input Current - Duty cycle less than 1.0%.
- (3) Test Circuit for  $V_{FM}$  and  $t_{fr}$  is as shown below:



INPUT CURRENT PULSE



OUTPUT VOLTAGE PULSE



# FSA1410

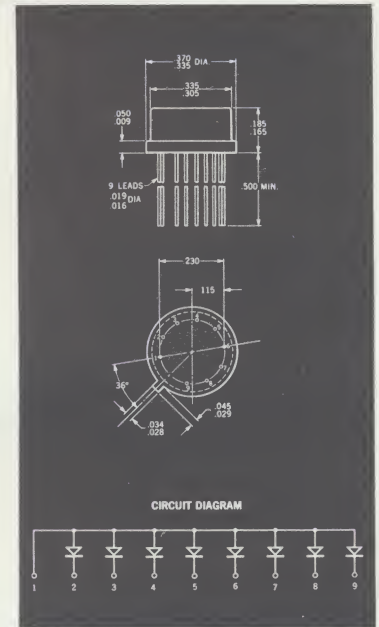
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$V_{F3}$	Forward Voltage		1.10	V	$I_F = 200$ mA (Note 2)
BV	Breakdown Voltage	60		V	$I_R = 100$ $\mu$ A
$I_{R1}$	Reverse Current		100	nA	$V_R = -40$ V
$I_{R2}$	Reverse Current ( $T_A = 150^\circ\text{C}$ )		100	$\mu$ A	$V_R = -40$ V
C	Capacitance		7.0	pf	$V_R = 0$ , $f = 1$ Mc
$t_{rr1}$	Reverse Recovery Time		25	nsec	$I_F = I_R = 10$ mA to 200 mA, $R_L = 100$ $\Omega$ , Rec. to 0.1 $I_F$
$t_{rr2}$	Reverse Recovery Time		90	nsec	$I_F = 300$ mA, $I_R = 60$ mA, $R_L = 100$ $\Omega$ , Rec. to 20 mA
$V_{FM}$	Peak Forward Voltage		5.0	V	$I_F = 500$ mA, $t_r \leq 10$ nsec (Note 3)
$t_{fr}$	Forward Recovery Time		40	nsec	$I_F = 500$ mA, $t_r \leq 10$ nsec, (Note 3)
					Rec. to 1.6 V

(See notes on back page)

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## ULTRA FAST, EIGHT DIODE, COMMON-ANODE ARRAY FSA1410

### NOTES:

- (1) Ratings apply to individual diodes. For multiple diode operation, total power must not exceed power dissipation rating listed.
- (2) Pulse Input Current - Duty cycle less than 1.0%.
- (3) Test Circuit for  $V_{FM}$  and  $t_{fr}$  is as shown below:

